Test 3 (testing of hypotheses)

1 Example

At the motorway with recommended speed 80 km/h we monitored the speeds of passing cars and obtained data (in km/h)

{89 93 78 82 76 95 83 89 94 72 89 87 81 85 76}

Test the hypothesis H0 that the average speed is 80 km/h. Test on the level 0.05.

Results

TH for expectation, both-sided, pv=0.025

2 Example

At the motorway with recommended speed 80 km/h we monitored the speeds of passing cars and obtained data (in km/h)

{89 93 78 82 76 95 83 89 94 72 89 87 81 85 76}

Test the hypothesis H0 that the average speed less than 80 km/h. Test on the level 0.05.

Results

TH for expectation, right-sided, pv=0.012

3 Example

At the motorway with recommended speed 80 km/h we monitored the speeds of passing cars and obtained data (in km/h)

{89 93 78 82 76 95 83 89 94 72 89 87 81 85 76}

Test the hypothesis H0 that the average speed greater than 80 km/h. Test on the level 0.05.

Results

TH for expectation, left-sided, pv=0.988

4 Example

The accuracy of setting of certain machine can be verified according to the variance of its products. If the variance is greater then the level 80, it is necessary to perform new setting. The following data sample has been measured

x = {258 215 225 229 235 228 231 225 242 222}

On the level 0.05 test if it is necessary to set the machine.

Results

TH for variance, right-sided, pv=0.065

5 Example

Consumption of cars is measured by two methods A and B. The same car has been subdued to measuring by both methods. The results are

A = {4.3 6.2 6.8 6.7 5.1 5.0}

B = {4.8 5.3 5.2 5.8 5.3 5.9}

On the level 0.05 test equality of both methods if the variability of methods is assumed to be equal, if the consumption is assumed to be normally distributed.

Results

TH for 2 expectations, equal variances, both-sided, pv=0.53

6 Example

We are going to test if the lights on left and right spotlights of cars have equal settings. The measured values (above the correct angle) are

xL= {4.6 2.2 2.5 -4.6 2.8 0.1}

xP= {3.2 -1.5 1.1 -4.8 3.5 -0.2}

Test at the level 0.05 on normality assumption.

Results

TH for 2 expectations, paired, both-sided, pv=0.152

7 Example

We are going to test if the right spotlights are higher then left ones. The measured values (above the correct angle) are

xL= {4.6 2.2 2.5 -4.6 2.8 0.1}

xR= {3.2 -1.5 1.1 -4.8 3.5 -0.2}

Test at the level 0.05 on normality assumption.

Results

TH for 2 expectations, paired, right-sided, pv=0.076

8 Example

At the motorway with recommended speed 80 km/h speeds of passing cars have been monitored the in the direction to the town (xT) and from the town (xF). The data measured are

xT = {86 86 78 77 82 75 79 82 97 88}

xF = {79 76 80 82 84 78 75 81 75 77}

At the level 0.05 test the hypothesis H0: From the town the cars go faster. The variances are supposed to be different.

Results

TH 2 expectations, independent, right-sided, pv=0.042